CLAIMS

What is claimed:

1. An antibody that competitively inhibits binding of a GPR64 polypeptide to an antibody selected from the group consisting of: GPR64-18, GPR64-81, GPR64-93, and GPR64-101.

2. The antibody of claim 1, wherein the antibody is conjugated to an effector moiety.

3. The antibody of claim 1, wherein the effector moiety is a fluorescent label, a radioisotope or a cytotoxic agent.

4. The antibody of claim 1, wherein the cytotoxic agent is selected from the group consisting of: diphtheria A chain, exotoxin A chain, ricin A chain, abrin A chain, curcin, crotin, phenomycin, enomycin, and auristatin.

5. The antibody of claim 1, wherein the cytotoxic agent is auristatin.

6. The antibody of claim 1, wherein the antibody is an antibody fragment.

7. The antibody of claim 6, wherein the antibody fragment is selected from the group consisting of Fab, Fab', $F(ab')_2$, Fv fragments, rIgG, diabodies, single chain antibodies, and multispecific antibodies.

8. The antibody of claim 1, wherein the antibody is a chimeric or humanized antibody.

9. The antibody of claim 1, wherein the antibody is a human antibody.

10. The antibody of claim 1, wherein the GPR64 polypeptide is on a cancer cell.

11. A pharmaceutical composition comprising a pharmaceutically acceptable excipient and the antibody of claim 1.

12. The pharmaceutical composition of claim 11, wherein the antibody is conjugated to an effector moiety.

13. The pharmaceutical composition of claim 12, wherein the effector moiety is a radioisotope or a cytotoxic agent.

14. The pharmaceutical composition of claim 13, wherein the cytotoxic agent is auristatin.

15. The pharmaceutical composition of claim 11, wherein the antibody is a chimeric or humanized antibody.

16. The pharmaceutical composition of claim 11, wherein the antibody is a human antibody.

17. A method of detecting ovarian cancer in a biological sample from a patient, comprising contacting the biological sample with an antibody of claim 1 and measuring the amount of bound antibody.

18. The method of claim 17, wherein the antibody is conjugated to a fluorescent label or a radioisotope.

19. A method of inhibiting proliferation of an ovarian cancer cell, the method comprising the step of contacting the cell with an antibody of claim 1.

20. The method of claim 19, wherein the antibody is an antibody fragment.

21. The method of claim 19, wherein the ovarian cancer cell is in a patient.

22. The method of claim 21, wherein the patient is a primate.

23. The method of claim 21, wherein the patient is undergoing a therapeutic regimen to treat metastatic ovarian cancer.

24. The method of claim 21, wherein the patient has or is suspected of having metastatic ovarian cancer.

25. An antibody comprising SEQ ID NO:17 and/or SEQ ID NO:18.

26. The antibody of claim 25, wherein the antibody is conjugated to an effector moiety.

27. The antibody of claim 26, wherein the effector moiety is a fluorescent label, a radioisotope or a cytotoxic agent.

28. A pharmaceutical composition comprising a pharmaceutically acceptable carrier or excipient and the antibody of claim 25.

29. A method of detecting a cancer cell in a sample from a patient, the method comprising contacting the sample with an antibody of claim 25.

30. A method of inhibiting proliferation of an ovarian cancer-associated cell, the method comprising the step of contacting the cell with an antibody of claim 25.

31. A monoclonal antibody that binds a polypeptide, wherein the polypeptide comprises a sequence that is at least 80% homologous to the sequence from amino acid 1 to and including amino acid 588 of SEQ ID NO:2.

32. The monoclonal antibody of claim 31, wherein the homology is at least 98%.

33. The monoclonal antibody of claim 31, wherein the antibody is an antibody fragment selected from the group consisting of Fab, Fab', $F(ab')_2$, Fv fragments, rIgG, diabodies, single chain antibodies, and multispecific antibodies.

34. The monoclonal antibody of claim 31, wherein the antibody inhibits proliferation of tumor cells.

35. The monoclonal antibody of claim 34, wherein the tumor cells are selected from the group consisting of ovarian cancer, Ewing's sarcoma, uterine cancer, and other GPR64-expressing tumor cells.

36. The monoclonal antibody of claim 34, wherein the antibody inhibits *in vivo* proliferation of tumor cells that overexpress GPR64.

37. The monoclonal antibody of claim 31, wherein the antibody is a chimeric, humanized or human antibody.

38. The monoclonal antibody of claim 31, wherein the antibody competes for binding to the ligand binding site of a ligand of GPR64.

39. The monoclonal antibody of claim 31, wherein the antibody reduces expression of GPR64.

40. The monoclonal antibody as in claim 31, wherein the antibody is conjugated to a cytotoxic agent.

41. The monoclonal antibody as in claim 40, wherein the cytotoxic agent is auristatin.

42. The monoclonal antibody as in claim 31, wherein the antibody mediates antibody dependent cellular cytotoxicity.

43. A host cell which produces the antibody of claim 31, wherein the host cell is selected from the group consisting of a Chinese Hamster Ovary (CHO) cell, E. coli, yeast cell, and insect cell.

44. A monoclonal antibody, wherein the antibody binds to the same GPR64 epitope as that bound by an antibody selected from group consisting of GPR64-18, GPR64-81, GPR64-93, and GPR64-101.

45. A monoclonal antibody, wherein the antibody binds to the same GPR64 epitope as that bound by the monoclonal antibody produced by a hybridoma cell line binds selected from the group consisting of: ATCC _____ (hybridoma OAM6#81); and ATCC _____ (hybridoma OAM6#93).

46. A hybridoma producing the monoclonal antibody of claim 31.

47. A hybridoma selected from the group consisting of hybridoma cell lines: ATCC _____ (hybridoma OAM6#81); and ATCC _____ (hybridoma OAM6#93).

48. A method of inhibiting the growth of tumor cells, the method comprising: administering to a mammal a therapeutically effective amount of an antibody capable of binding to an amino acid sequence having at least 80% homology to a sequence from amino acid 1 to and including amino acid 588 of SEQ ID NO:2.

49. The method of claim 48, wherein the antibody is conjugated to an effector moiety.

50. The method of claim 48, wherein the antibody mediate antibody dependent cellular cytotoxicity.

51. The method of claim 48, wherein the antibody is a monoclonal antibody.

52. The method of claim 48, wherein the tumor cells comprise a carcinoma selected from the group consisting of ovarian cancer, Ewing's sarcoma, uterine cancer, and other GPR64 expressing tumor cell types.

53. The method of claim 52, wherein the tumor cells are ovarian tissue cells.

54. The method of claim 52, wherein the mammal is a human.

55. The method of claim 48, wherein the method further comprises administering a therapeutically effective amount of a cytotoxic agent.

56. The method of claim 55, wherein the antibodies and cytotoxic agent are administered simultaneously.

57. The method of claim 55, wherein the antibody is administered to the patient before the cytoxic agent.

58. The method of claim 55, wherein the cytotoxic agent is administered before the antibody.

59. The method of claim 55, wherein the cytotoxic agent is conjugated to the antibody.

60. A composition comprising an antibody that binds specifically to an amino acid sequence having at least 80% homologous to a sequence from amino acid 1 to and including amino acid 588 of SEQ ID NO:2, and a pharmaceutically acceptable excipient.

61. The composition of claim 60, further comprising a cytotoxic agent.

62. A composition comprising an antibody and a pharmaceutically acceptable carrier or excipient, wherein the antibody is a monoclonal antibody produced by a hybridoma cell line selected from the group consisting of ATCC _____ (hybridoma OAM6#81); and ATCC _____ (hybridoma OAM6#93).

63. A method of diagnosing a tumor in a mammal, comprising: (a) contacting an antibody with a test sample obtained from the mammal; and (b) detecting the formation of a complex between the antibody and a polypeptide of the test sample, wherein the antibody binds the polypeptide comprising an amino acid sequence having at least 80% homology to the sequence from amino acid 1 to and including amino acid 588 of SEQ ID NO:2.

64. The method of claim 63, wherein said test sample is obtained from an individual suspected of having neoplastic cell growth or proliferation.

65. The method of claim 63, wherein the test sample is obtained from an individual suspected of having ovarian cancer.

66. A method of producing high serum titers of specific antibodies to cell surface receptor proteins comprising:

a. providing a cell surface receptor with a mutation that uncouples the receptor from it signaling system;

b. transfecting and expressing the mutant receptor in a cell line;

c. passively immunizing a mammal with the cell line;

whereby specific antibodies to the cell surface receptor are produced in high serum titer.

67. The method of claim 66 wherein the cell surface receptor is a G protein coupled receptor.

68. The method of claim 67, wherein the G protein coupled receptor is GPR64.

69. The method of claim 66 wherein the mutation is a DRY box mutation. The method of claim 66, wherein the cell line the Balb/c syngeneic cell line 3T12.